

Curriculum Vitae

Masaki Shigemori

■ Personal

Name Masaki Shigemori
Work address Institute for Theoretical Physics, University of Amsterdam
Valckenierstraat 65, 1018 XE Amsterdam, The Netherlands

■ Jobs

Sep. 2007–present Postdoctoral researcher.
String Theory Group, Institute for Theoretical Physics,
University of Amsterdam, Netherlands.
Sep. 2004–Aug. 2007 Postdoctoral scholar.
Particle Theory Group, California Institute of Technology,
Pasadena, USA.

■ Education

2000–2004 Ph.D. in theoretical elementary particle physics
University of California, Los Angeles, USA.
Advisor: Prof. Per Kraus
Viva date: May 17, 2004; Award date: September 17, 2004
1998–2000 Ph.D. student in theoretical condensed matter physics
University of Tokyo, Japan
1996–1998 M.S. in theoretical condensed matter physics
University of Tokyo, Japan
1992–1996 B.S. in Physics
University of Tokyo, Japan

■ External Activities

Talks at workshops and conferences

- “Brownian motion in AdS/CFT”
 - *Frontier of Research in Higher Dimensional Black Holes*, Yukawa Institute for Theoretical Physics, Kyoto, Japan, Dec. 24, 2009 (invited).
 - *Branes, Strings, and Black Holes*, Yukawa Institute for Theoretical Physics, Kyoto, Japan, Oct. 21, 2009.

- *String Theory*, The Centro de Ciencias de Benasque Pedro Pascual (CCBPP), Benasque, Spain, Jul. 9, 2009.
- *Tenth Workshop on Non-Perturbative Quantum Chromodynamics*, l’Institut Astrophysique de Paris, Paris, France, Jun. 12, 2009.
- “Small Black Rings”
 - *Black Holes: A Landscape of Theoretical Physics Problems*, CERN, Switzerland, Aug. 28, 2008.
 - *Southern California Strings Seminar*, UCLA, Los Angeles, Dec. 1, 2006.
- “How a Black Hole Emerges from a Pure State”
 - *IPM String School and Workshop*, Institute for Studies in Theoretical Physics and Mathematics (IPM), Tehran, Iran, Apr. 16, 2006.
- “Counting Small Black Rings”
 - *Mathematical Structures in String Theory*, Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, Dec. 12, 2005.

Talks at regular seminars

- “Brownian motion in AdS/CFT,” IPMU, Kashiwa, Japan, Nov. 2, 2009; CERN, Switzerland, Mar. 3, 2009; String Theory in Greater Paris, France, Feb. 5, 2009; Utrecht University, Nov. 14, 2008.
- “Are there four-dimensional black rings?,” Service de Physique Théorique, CEA Saclay, France, Dec. 21, 2007.
- “Metastable vacua in gauge theory and M-theory: Dijkgraaf–Vafa meets Seiberg–Witten in M,” String Theory in Greater Paris, France, Dec. 20, 2007; Niels Bohr Institute, University of Copenhagen, Dec. 13, 2007; Ludwig-Maximilians-Universität Munchen, Nov. 8, 2007.
- “Nonsupersymmetric Brane/Antibrane Configurations in Type IIA and M Theory,” University of British Columbia, Canada, Jul. 5, 2007; University of Amsterdam, Netherlands, Jun. 21, 2007; Yukawa Institute for Theoretical Physics, Japan, Jun. 14, 2007; University of Osaka, Japan, Jun. 12, 2007; University of Nagoya, Japan, Jun. 11, 2007; University of Tokyo, Hongo, Japan, Jun. 7, 2007; Tokyo Institute of Technology, Japan, Jun. 6, 2007; University of Tokyo, Komaba, Japan, Jun. 4, 2007; Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, May 17, 2007
(<http://online.itp.ucsb.edu/online/joint98/shigemori/>).
- “New Branches of Nonsupersymmetric Attractors,” Harvard University, Cambridge, Apr. 18, 2007.
- “The Phases of D1-D5 CFT — Towards Understanding Black Ring Microscopies,” Massachusetts Institute of Technology, Cambridge, Oct. 10, 2006.

- “How a Black Hole Emerges from a Pure State,” University of Chicago, Oct. 18, 2006; Perimeter Institute, Waterloo, Canada, Oct. 17, 2006; Brown University, Oct. 11, 2006; Harvard University, Oct. 4, 2006; Tata Institute of Fundamental Research (TIFR), Mumbai, India, Apr. 21, 2006; University of Wisconsin, Madison, Feb. 14, 2006; University of Michigan, Ann Arbor, Feb. 8, 2006.
- “Small Black Rings,” University of Tokyo, Hongo, Tokyo, Japan, September 30, 2005.
- “Massless Black Holes and Black Rings as Effective Geometries of the D1-D5 System,” University of Tokyo, Hongo, Japan, Sep. 29, 2005; University of Tokyo, Komaba, Japan, Sep. 28, 2005; Yukawa Institute for Theoretical Physics, Kyoto, Japan, Sep. 22, 2005; University of Nagoya, Japan, Sep. 21, 2005; University of Osaka, Japan, Sep. 20, 2005.
- “Geometry / Gauge Theory Duality and the Dijkgraaf-Vafa Conjecture,” May 17, 2004, UCLA.
- “Supersymmetric Gauge Theories with Flavors and Matrix Models,” University of Pennsylvania, Feb. 21, 2005; The Institute of Physical and Chemical Research (RIKEN), Japan, Dec. 10, 2004; University of Tokyo, Hongo, Japan, Dec. 9, 2004; High Energy Accelerator Research Organization (KEK), Japan, Dec. 7, 2004.
- “On Low Rank Classical Groups in String Theory, Gauge Theory and Matrix Models,” Tokyo Institute of Technology, Tokyo, Japan, Dec. 5, 2003; California Institute of Technology, Dec. 12, 2003; University of Kentucky, Jan. 6, 2004.
- “Gauge theory - geometry duality and $Sp(0)$,” UCLA, Oct. 14, 2003.
- TASI student talk, University of Colorado, Boulder, Jun. 2003.

Workshops attended

- *Gravity – New perspectives from strings and higher dimensions*, The Centro de Ciencias de Benasque Pedro Pascual (CCBPP), Benasque, Spain, Jul. 13–17, 2009.
- *Strings 2009*, Pontificia Università San Tommaso D’Aquino, Rome, Italy, Jun. 22–26, 2009.
- *Strings 2008*, CERN, Switzerland, Aug. 18–23, 2008.
- *String Theory Workshop 2008*, University of Amsterdam, Jul. 7–11, 2008.
- *Eurostrings 2008*, University of Amsterdam, Jun. 30–Jul. 4, 2008.
- *Gravitational Thermodynamics and the Quantum Nature of Space Time*, Edinburgh, United Kingdom, Jun. 16–20, 2008.
- *Simons Workshop in Mathematics and Physics 2007*, C. N. Yang Institute for Theoretical Physics, Stony Brook University, Aug. 6–10, 2007.
- *Recent Advances in Black Hole Physics in String Theory*, Aspen Center for Physics, Aug. 21–Sep. 10, 2006.

- *Cargese Summer School — Strings and Branes: The present paradigm for gauge interactions and cosmology*, Institut d'Études Scientifiques de Cargèse, Corsica, France, May 22–Jun. 3, 2006.
- *Scanning New Horizons: GR Beyond 4 Dimensions*, Kavli Institute for Theoretical Physics (KITP), University of California, Santa Barbara, Feb. 20–24, 2006.
- *Strings 2005*, Fields Institute, University of Toronto, Jul. 11–16, 2005.
- *Spring School on Superstring Theory and Related Topics*, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, Mar. 14–22, 2005.
- *Workshop on Gravitational Aspects of String Theory*, Fields Institute, University of Toronto, Canada, May 2–6, 2005.
- *Conformal Field Theory Reunion Conference II*, Institute for Pure and Applied Mathematics, UCLA, Lake Arrowhead, Dec. 12–17, 2004.
- *Quantum Theory of Black Holes*, Ohio Center for Theoretical Science, The Ohio State University, Sep. 17–19, 2004.
- *The Second Simons Workshop in Mathematics and Physics*, C. N. Yang Institute for Theoretical Physics, Stony Brook University, Aug. 9–27, 2004.
- *Prospects in Theoretical Physics (PiTP)*, Institute for Advanced Study, Jul. 19–30, 2004.
- *Spring School on Superstring Theory and Related Topics*, The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, Mar. 15–23, 2004.
- *Theoretical Advanced Study Institute (TASI)*, University of Colorado, Boulder, Jun. 1–27, 2003.
- *Matrix Models and Supersymmetric Yang-Mills Theories — First Reunion of the Conformal Field Theory Program*, Institute for Pure and Applied Mathematics, UCLA, Lake Arrowhead, Apr. 21–25, 2003.

■ Membership

Physical Society of Japan

■ Research Experience

- 2007–present *University of Amsterdam (postdoctoral researcher):*
String theory, gravity, AdS/CFT correspondence, quantum field theory.
- 2004–2007 *California Institute of Technology (postdoctoral scholar):*
String theory, gravity, quantum field theory.
Black holes/rings in string theory, AdS/CFT correspondence,
Nonsupersymmetric metastable states in string/gauge theory.
- 2000–2004 *University of California, Los Angeles (graduate student):*
String theory, gravity, quantum field theory.
Noncommutative field theory, noncompact CFT,
gauge theory–geometry duality, Dijkgraaf–Vafa conjecture
(advisor: Per Kraus).
- 1996–2000 *University of Tokyo (graduate student):*
Theoretical condensed matter physics.
Methods of quantum field theory, superconductivity, superfluidity
(advisor: Akira Shimizu)
- 1995–1996 *University of Tokyo (undergraduate work-study):*
Development of experiment apparatus for fusion tokamak
(supervisor: Katsushi Toyama).

■ Teaching Experience

- Feb.–May 2009 I taught a course on *String Theory* at the graduate level with Prof. Kostas Skenderis at the University of Amsterdam. See http://staff.science.uva.nl/~skenderi/string_theory_2009.html.
- Nov. 2008 I gave a series of lectures on “*Supersymmetric gauge theories*” at *Amsterdam-Brussels-Paris Doctoral School on Quantum Field Theory, Strings and Gravity* at Solvay Institutes. See http://www.solvayinstitutes.be/Activities_Description/DoctoralSchool/DoctoralSchool.html.
- 2000–2004 University of California, Los Angeles: Teaching Assistant
Upper Division Courses in Quantum Mechanics;
Lower Division Undergraduate Physics Labs.

■ Honors, Awards

- JSPS (Japanese Society for the Promotion of Science) Fellowship, 2007
(I was awarded this fellowship but declined it, because I accepted another offer).
- Prize Fellowship, California Institute of Technology, 2004–2007.
- JSPS (Japanese Society for the Promotion of Science) Fellowship, 2004
(I was awarded this fellowship but declined it, because I accepted another offer).

- Heiwa Nakajima Foundation Scholarship (Japanese foundation scholarship), 2000–2002.

■ Organizing

String Theory Group Seminars, University of Amsterdam, 2007–2008.

String Theory Group Journal Club, University of Amsterdam, 2007–2008.

High Energy Theory Seminars, California Institute of Technology, 2005–2006.

■ Refereeing

Nucl. Phys. B (3), JHEP (1).

■ Outreach

- I wrote an invited review article for the membership journal of Japanese Physical Society in 2006 [10].

■ Publications

In my field of research (theoretical high energy physics, hep-th), the author names are in alphabetical order, independent of the contribution.

- [1] A. Atmaja, J. de Boer, and M. Shigemori, “Holographic Brownian motion and time scales in strongly coupled plasma,” in preparation.
- [2] J. de Boer, K. Papadodimas and M. Shigemori, “Multi-trace superpotentials from M5-branes,” work in progress.
- [3] M. Shigemori, “Brownian motion in AdS/CFT,” in Proceedings of the Tenth Workshop on Non-Perturbative Quantum Chromodynamics, l’Institut Astrophysique de Paris June 8–12, 2009, SPIRES eConf, to appear.
- [4] J. de Boer, V. E. Hubeny, M. Rangamani and M. Shigemori, “Brownian motion in AdS/CFT,” JHEP **07**, 094 (2009) [arXiv:0812.5112 [hep-th]].
- [5] L. Hollands, J. Marsano, K. Papadodimas and M. Shigemori, “Nonsupersymmetric Flux Vacua and Perturbed $\mathcal{N} = 2$ Systems,” JHEP **10**, 102 (2008) [arXiv:0804.4006 [hep-th]].
- [6] M. Shigemori, J. Marsano and K. Papadodimas, “Off-shell M5 Brane, Perturbed Seiberg-Witten Theory, and Metastable Vacua,” Nucl. Phys. B **804**, 19–69 (2008) [arXiv:0801.2154 [hep-th]].
- [7] N. Iizuka and M. Shigemori, “Are There Four-Dimensional Small Black Rings?,” Phys. Rev. D **77**, 044044 (2008) [arXiv:0710.4139 [hep-th]].
- [8] M. Shigemori, J. Marsano and K. Papadodimas, “Nonsupersymmetric brane / antibrane configurations in type IIA and M theory,” Nucl. Phys. B **789**, 294–361 (2008) [arXiv:0705.0983 [hep-th]].
- [9] A. Dabholkar, N. Iizuka, A. Iqbal, A. Sen and M. Shigemori, “Spinning strings as small black rings,” JHEP **0704**, 017 (2007) [arXiv:hep-th/0611166].
- [10] M. Shigemori, “Towards Statistical Mechanical Understanding of Black Holes,” Nihon Butsuri Gakkaishi (Membership Journal of Japanese Physical Society) **61**, 506 (2006), in Japanese.
- [11] A. Dabholkar, N. Iizuka, A. Iqbal and M. Shigemori, “Precision Microstate Counting of Small Black Rings,” Phys. Rev. Lett. **96**, 071601 (2006) [arXiv:hep-th/0511120].
- [12] M. Shigemori, V. Balasubramanian and P. Kraus, “Massless black holes and black rings as effective geometries of the D1-D5 system,” Class. Quant. Grav. **22**, 4803–4837 (2005) [arXiv:hep-th/0508110].
- [13] N. Iizuka and M. Shigemori, “A note on D1-D5-J system and 5D small black ring,” JHEP **0508**, 100 (2005) [arXiv:hep-th/0506215].

- [14] M. Shigemori, “The Geometry/Gauge Theory Duality and the Dijkgraaf–Vafa Conjecture,” Ph.D. thesis (University of California, Los Angeles) [arXiv:hep-th/0409038].
- [15] M. Shigemori, C. Ahn, B. Feng and Y. Ookouchi, “Supersymmetric gauge theories with flavors and matrix models,” Nucl. Phys. B **698**, 3–52 (2004) [arXiv:hep-th/0405101].
- [16] M. Shigemori, K. Intriligator, P. Kraus, A. V. Ryzhov and C. Vafa, “On low rank classical groups in string theory, gauge theory and matrix models,” Nucl. Phys. B **682**, 45–82 (2004) [arXiv:hep-th/0311181].
- [17] P. Kraus, A. V. Ryzhov and M. Shigemori, “Loop equations, matrix models, and $\mathcal{N} = 1$ supersymmetric gauge theories,” JHEP **0305**, 059 (2003) [arXiv:hep-th/0304138].
- [18] P. Kraus and M. Shigemori, “On the matter of the Dijkgraaf–Vafa conjecture,” JHEP **0304**, 052 (2003) [arXiv:hep-th/0303104].
- [19] P. Kraus, A. Ryzhov and M. Shigemori, “Strings in noncompact spacetimes: Boundary terms and conserved charges,” Phys. Rev. D **66**, 106001 (2002) [arXiv:hep-th/0206080].
- [20] P. Kraus and M. Shigemori, “Non-commutative instantons and the Seiberg–Witten map,” JHEP **0206**, 034 (2002) [arXiv:hep-th/0110035].
- [21] M. Shigemori, A. Shimizu, T. Brandes and J. Inoue, “Strong enhancement of superconducting correlation in a two-component fermion gas,” J. Phys. Soc. Jpn. **68**, 2194–2197 (1999); Physica B **284–288**, 443–444 (2000) [arXiv:cond-mat/9902079].
* This paper is in condensed matter physics and the author names are ordered according to contribution.

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